

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of

Atty. Docket

SLUIDJTER et al.

PHN 16-947A

Serial No.

Group Art Unit:

Filed: CONCURRENTLY

Examiner:

Title: TRANSMISSION SYSTEM WITH IMPROVED SPEECH ENCODER

Honorable Commissioner for Patents  
Washington, D.C. 20231

PRELIMINARY AMENDMENT

Sir:

Prior to examination, please amend the above-identified application as follows:

IN THE ABSTRACT

Please delete the Abstract in its entirety and substitute therefor the enclosed Substitute Abstract, where a marked-up version is attached as Appendix A.

IN THE CLAIMS

Please cancel claims 1-13 without prejudice, and add new claims 14-19 as follows:

1 --14. (New) A speech decoder, comprising:

2 means for determining a level of background noise in a speech

3 signal;  
4 an output;  
5 a post filter in electrical communication with said output  
6 when the level of the background noise is equal to or less than a  
7 threshold value; and  
8 a synthesis filter in electrical communication with said  
9 output when the level of the background noise is greater than the  
10 threshold value.

1 15. (New) A speech decoding method, comprising:  
2 determining a level of background noise in a speech signal;  
3 connecting a post filter to an output of a speech decoder when  
4 the level of the background noise is equal to or less than a  
5 threshold value; and  
6 connecting a synthesis filter to the output of the speech  
7 decoder when the level of the background noise is greater than the  
8 threshold value.

1 16. (New) A transmission system including a speech decoder,  
2 said speech decoder comprising:  
3 a detector which determines a level of background noise in a  
4 speech signal;  
5 an output;

6       a post filter in electrical communication with said output  
7   when the level of the background noise is equal to or less than a  
8 threshold value; and

9       a synthesis filter in electrical communication with said  
10 output when the level of the background noise is greater than the  
11 threshold value.

1       17. (New) The transmission system of claim 16, further  
2 comprising a speech encoder operable to provide an encoded speech  
3 signal;

4       wherein said speech encoder includes:

5       means for determining a level of background noise in a speech  
6 signal, and

7       a perceptually weighted filter operable to provide a  
8 perceptually weighted error signal representing a perceptually  
9 weighted error between the speech signal and a synthetic speech  
10 signal, said perceptually weighted filter operating in accordance  
11 with a first transfer function when the level of the background  
12 noise is equal to or less than a threshold value, and

13       said perceptually weighted filter operates in accordance with  
14 a second transfer function when the level of the background noise  
15 is greater than the threshold value.

1       18. (New) The transmission system of claim 16, said speech  
2 encoder further includes:

3           means for deriving a first set of linear prediction  
4           coefficients from the speech signal;  
5           high pass filter operable to filter the speech signal; and  
6           means for deriving a second set of linear prediction  
7           coefficients from the speech signal as filtered by the high pass  
8           filter.

1       19. (New) The transmission system of claim 18, wherein the  
2       first set of linear prediction coefficients are variables of the  
3       first transfer function, and

4           the second set of linear prediction coefficients are variables  
5           of the second transfer function.--

REMARKS

Entry of the present preliminary amendment is respectfully requested.

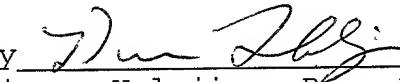
By means of the present preliminary amendment, the current Abstract has deleted and substituted with the enclosed Substitute Abstract which conforms to U.S. practice. Further, claims 1-13 have been canceled without prejudice, and new claims 10-19 have been added that have similar patentable features as the claims of the parent application Serial No. 09/316,984, which has been allowed and is now pending.

It is respectfully submitted that the present application is in condition for allowance, and a Notice of Allowance is earnestly solicited.

If any informalities remain, the Examiner is requested to telephone the undersigned in order to expedite allowance.

Please charge any fee deficiencies and credit any overpayments to Deposit Account No. 14-1270.

Respectfully submitted,

By   
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February 22, 2002

Enclosure: Substitute Abstract  
Marked Up Abstract (Appendix A)

SUBSTITUTE ABSTRACT

A speech transmission system with an input speech signal applied to a speech encoder for encoding the speech signal which is transmitted via a communication channel to a speech decoder. Background noise dependent processing elements in the speech encoded and/or speech encoder are introduced to improve the performance of the transmission system. The parameters of the perceptual weighting filter in the speech encoder are derived by calculation linear prediction coefficients from a speech signal which is processed by means of a high pass filter. An adaptive post filter in a speech decoder is bypassed when the noise level exceeds a threshold values.

## Appendix A

### Version with Markings to Show Changes Made to the Abstract

In a speech transmission system, an input speech signal is applied to a speech encoder (12, 36) for encoding the input speech signal. The encoded speech signal is transmitted via a communication channel (10) to a speech decoder (30, 48).

In order to improve the performance of the transmission system in the presence of background noise, it is proposed to introduce background noise dependent processing elements in the speech encoder (12, 36) and/or in the speech decoder (30, 48).

In a first embodiment of the invention, the parameters of the perceptual weighting filter (124) in the speech encoder (12, 36) are derived by calculating linear prediction coefficients ( $\hat{a}$ ) from a speech signal which is processed by means of a high pass filter (82).

In a second embodiment of the invention, an adaptive post filter (150) in a speech decoder (30, 48) is bypassed when the noise level exceeds a threshold value.

Fig. 1

A speech transmission system with an input speech signal applied to

a speech encoder for encoding the speech signal which is transmitted via a communication channel to a speech decoder.  
Background noise dependent processing elements in the speech encoded and/or speech encoder are introduced to improve the performance of the transmission system. The parameters of the perceptual weighting filter in the speech encoder are derived by calculation linear prediction coefficients from a speech signal which is processed by means of a high pass filter. An adaptive post filter in a speech decoder is bypassed when the noise level exceeds a threshold values.